

BOOK REPORTS

The Book Reports section is a regular feature of *Computers & Mathematics with Applications*. It is an unconventional section. The Editors decided to break with the longstanding custom of publishing either lengthy and discursive reviews of a few books, or just a brief listing of titles. Instead, we decided to publish every important material detail concerning those books submitted to us by publishers, which we judge to be of potential interest to our readers. Hence, breaking with custom, we also publish a complete table of contents for each such book, but no review of it as such. We welcome our readers' comments concerning this enterprise. Publishers should submit books intended for review to the Editor-in-Chief,

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Building Expert Systems. Edited by Frederick Hayes-Roth, Donald A. Waterman and Douglas B. Lenat. Addison-Wesley, Reading, Mass. (1983). 444 pages. \$44.25.

Contents:

1. An overview of expert systems
2. What are expert systems?
3. Basic concepts for building expert systems
4. The architecture of expert systems
5. Constructing an expert system
6. An investigation of tools for building expert systems
7. Reasoning about reasoning
8. Evaluation of expert systems: issues and case studies
9. Language and tools for knowledge engineering
10. Emergency management of inland oil and hazardous chemical spills: a case study in knowledge engineering

A Guide to Expert Systems. By Donald A. Waterman. Addison-Wesley, Reading, Mass. (1986). 419 pages. \$33.50.

Contents:

1. What are expert systems?
2. What good are expert systems?
3. How are expert systems organized?
4. How do expert systems differ from conventional programs?
5. What have expert systems been used for?
6. PROSPECTOR: an expert system at work
7. Knowledge representation in expert systems
8. The nature of expert system tools
9. Stages in the development of expert system tools
10. Examples of knowledge engineering languages
11. Will expert systems work for my problem?
12. Building an expert system
13. Choosing a tool for building expert systems
14. Acquiring knowledge for the experts
15. An example of the expert-system-building process
16. Difficulties in developing an expert system
17. Common pitfalls in planning in expert system
18. Pitfalls in dealing with the domain expert
19. Pitfalls during the development process
20. Where is expert system work being done?
21. How are expert systems faring in the commercial marketplace?
22. What's next for expert systems?
23. Sources of additional information about expert systems
24. Index for expert systems
25. Catalog of expert systems
26. Bibliography of expert systems
27. Index for expert systems tools
28. Catalog of expert system tools

29. Bibliography of expert system tools
30. Companies engaged in expert systems work

Introduction to Expert Systems. By Peter Jackson. Addison-Wesley. (1986). 246 pages. \$24.75.

Contents:

1. Expert systems and artificial intelligence
2. Heuristic search in DENDRAL and META-DENDRAL
3. Production systems
4. Structured objects
5. Predicate logic
6. MYCIN: medical diagnosis using production rules
7. MYCIN derivatives: EMYCIN, TEIRESIA and NEOMYCIN
8. INTERNIST: representation of knowledge by structured objects
9. R1: recognition as a problem solving strategy
10. CENTAUR: a combination of frames and rules
11. Meta-level inference and common sense reasoning in MECHO
12. Tools for building expert systems
13. Knowledge acquisition
14. Explaining expert system behavior
15. Summary and conclusions

Expert Systems for Business. Edited by Barry G. Silverman. Addison-Wesley, Reading, Mass. (1987) 446 pages. \$25.75.

Contents:

1. Building an expert system capability
2. Expert support systems
3. Expert systems
4. Integrating expert systems into the business environment
5. Next-generation technology

PROLOG: Programming for Artificial Intelligence. By Ivan Bratko. Addison-Wesley, Reading, Mass. (1987) 423 pages. \$29.25.

Contents:

1. An overview of PROLOG
2. Syntax and meaning of PROLOG programs
3. Lists, operators, arithmetic
4. Using structures: example programs
5. Controlling backtracking
6. Input and output
7. More built-in procedures
8. Programming style and technique
9. Operations on data structures
10. Advanced tree representations
11. Basic problem-solving strategies
12. Best first: a heuristic search principle
13. Problem reduction and AND/OR graphs
14. Expert systems
15. Game playing
16. Pattern-directed programming